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Social Capital and Willingness to Pay for Community-based Health Insurance in Rural Communities of Delta State, Nigeria

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Abstract

Background: The amount of social capital in a community can be an asset for the breakthrough and sustainability of community-based health insurance (CBHI), thereby contributing to the demand for it at the community level. **Aims:** This study aimed to assess the relationship between social capital and willingness to pay (WTP) for CBHI in rural communities of Delta State. **Materials and Methods:** A cross-sectional study design was employed to assess the level of social capital and WTP for CBHI among a sample of 412 households using a multistage sampling technique. Data was collected using an interviewer-administered semi-structured questionnaire. Descriptive and inferential analyses of the data collected were carried out using the IBM SPSS version 22 software. **Results:** the mean age of respondents was 50.42 ± 14.54 years. Females were about half (50.5%) of the respondents, and 19.9% of respondents had no formal education. The mean individual WTP amount per month was 600.75 ± 419.48 naira (1.30 ± 0.91 US dollar). The association between social capital ($\chi^2 = 193.043$; $P < 0.001$) and WTP for CBHI was statistically significant. Other factors such as sex ($\chi^2 = 10.168$; $P = 0.001$), education ($\chi^2 = 14.06$; $P < 0.001$), religion ($\chi^2 = 40.565$; $P < 0.001$) and household with younger people < 18 years ($\chi^2 = 14.361$; $P < 0.001$) were also significantly associated with WTP for CBHI. **Conclusion:** This study reported a significant association between social capital and WTP for CBHI.

Keywords: Community-based health insurance, rural communities, social capital, willingness to pay

INTRODUCTION

Community-based health insurance (CBHI) is a not-for-profit type of health insurance that is managed and operated by a community organisation other than the government or a private for-profit company, which provides resource pooling and risk sharing to cover the cost of all or part of healthcare services.^[1] CBHI schemes are risk-pooling mechanisms that protect people working in the informal economic sector against regressive out-of-pocket payments and catastrophic health expenditure at the time of illness.^[2] Most CBHI schemes cover a wide spectrum of programmes that share at least three attributes: not-for-profit prepayment plans for healthcare, community control and voluntary membership.^[3,4] They are quite common in sub-Saharan Africa, especially in West and East Africa and a large variety of such schemes encompasses

programmes that cover high-cost, low-frequency events as well as those that cover low-cost, high-frequency events.^[3]

The introduction of CBHI in many parts of Nigeria, with its attendant benefits of protection from payment at the point of use of health services, has been hampered by low enrolment rates, limited resource mobilisation and poor sustainability; even though it has been perceived as having the capacity to improve access to good quality health care services.^[5-7] This is further aggravated by the fact that $< 5\%$ of Nigerians are covered by the National Health Insurance Scheme (NHIS), which has a higher coverage among federal civil servants, leaving the rest of the

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population (especially those in the rural and informal sectors) without any form of health insurance.^[8,9] Furthermore, enrolment for Community Health Insurance in Nigeria has been low with small average premiums, because of a lack of study on Willingness to Pay (WTP) before such schemes took off.^[10] Nonetheless, evidence has revealed a high drop-out rate in communities where WTP was not carried out before the commencement of the scheme.^[11] However, this was not the case where WTP was done before instituting CBHI, which underscores the importance of WTP study before the establishment of CBHI.^[12]

Besides the contingent valuation theory, which is used to evaluate people's WTP, social capital has also been known to be vital to understanding the contextual issues affecting the feasibility and effectiveness of CBHI.^[13,14] The amount of social capital in the community could be an asset for the breakthrough of CBHI, which could increase the enrolment for CBHI at the community level.^[13,14] Social capital has been variously defined by different authors as follows:^[13] 'the norms and networks that enable individuals to act collectively';^[15] the existence of a certain set of informal values or norms shared among the members of a group that permit cooperation among them;^[16] and circumstances in which individuals can benefit from group membership'.^[17] Thus, social capital refers to 'social life-networks, norms and trust that enable households to act together more effectively to pursue shared objectives'.^[13,18,19] It has also been defined as 'the information, trust and norms of reciprocity inherent in one's social network'.^[20,21] However, there is currently no consensus on how to measure social capital;^[14,21] trust and reciprocity will be measured as proxies for social capital in this study.

Evidence has also shown that social capital is positively associated with increased enrolment and WTP for CBHI.^[22,23] However, there is a dearth of literature that explores the relationship between social capital and WTP for CBHI in rural communities of Nigeria. Such studies have become imperative in Delta State following the establishment of the Delta State Contributory Health Commission (DSCHC) in 2015, with the goal of expanding health insurance coverage to every resident of Delta State, irrespective of their socioeconomic status or geographical location.^[24] The informal health plan, which is one of the four major health insurance plans in the state-wide contributory health scheme, is targeted at people in the rural and informal sector of Delta State.^[24] It is against this background that this study was conducted to assess the relationship between social capital and WTP premium for CBHI in rural communities of Delta State, Nigeria. The study also assessed the predictors of WTP for CBHI.

MATERIALS AND METHODS

Study setting

This study was conducted between December 2016 and June 2017 in four rural communities of Delta State selected by a multistage sampling technique. Delta State is an oil-rich and

agricultural producing state that is situated in the South-South geopolitical zone of Nigeria. The State is generally low-lying without remarkable hills and has a wide coastal belt interlaced with rivers and streams, which form part of the Niger-Delta region.^[25] The State has twenty-five local government areas (LGAs) spread across three senatorial districts, namely Delta North, Delta Central and Delta South.

Study design and population

The study was a cross-sectional descriptive survey conducted among household heads in four representative rural communities of Delta State, Nigeria. A household comprised of people who live together and eat from the same pot, while the household head is the person responsible for leadership and decision-making in the household. All consenting adult household heads who have lived in the selected communities for more than 6 months were included in the study. However, in the absence of the household head, the spouse or the eldest member of the household considered the most suitable replacement for the household head was interviewed. All household heads who are too old or too ill to respond to the questions and those who are already on health insurance were excluded from the study.

Sample size determination and sampling procedure

The minimum sample size for this study was determined using Fisher's formula.^[26] Based on a proportion of 59.4% (0.594) of people willing to join and pay for CBHI from a previous study,^[27] and an error margin of 5% and a standard normal deviation at 95% confidence level, the determined minimum sample size was 371. Considering a non-response rate of 10%, the sample size for the study was increased to 412. Hence, 412 household heads participated in the study. A multistage sampling technique was used to select four representative rural communities from Delta State. In the first stage, one senatorial district (Delta North) was selected by simple random sampling by balloting from the list of three senatorial districts in Delta State, Nigeria. In the second stage, two LGAs (Ukwuani and Ndokwa-west LGAs) were selected by simple random sampling (balloting) from the list of nine LGAs in the Delta North senatorial districts. In the third stage, all the rural communities in the two selected LGAs were regarded as clusters from which four representative rural communities (clusters) were selected (two clusters per LGA) by simple random sampling (balloting) from the list of the rural communities in the two selected LGAs. Two rural communities (Umuebu and Umuaja) were selected by simple random sampling (balloting) from the list of seven rural clans in Ukwuani LGA. Similarly, two rural communities (Abbi and Utagba-uno) were selected by balloting from the list of six rural clans in Ndokwa-West LGA. All eligible and consenting household heads from the four selected rural communities (Umuebu, Umuaja, Abbi and Utagba-uno) were interviewed until the desired sample size was achieved.

Study instrument and data collection

A semi-structured, interviewer-administered questionnaire was

used to collect data from household heads. The questionnaire was adapted from previous studies on CBHI in Ethiopia^[28] and Nigeria.^[29] It was adapted to local conditions, pretested in a non-participating community and validated to suit this study. The questionnaire elicited information on socio-demographic characteristics, social capital and WTP for a hypothetical CBHI scheme. The Double-Bounded Dichotomous Choice Contingent Valuation (DBDC-CV) method was used to assess WTP using a hypothetical CBHI Scenario. This was supported with an open-ended question for those who do not pick a 'yes' for either the first or second option. This enabled respondents to pick lower amounts (as low as zero) or higher amounts.

Hypothetical community-based health insurance model and scenario for eliciting willingness to pay for community-based health insurance

The hypothetical CBHI model used in this study was adopted from a previous study in Nigeria.^[29] The model was first presented to the respondents with the concept of CBHI thoroughly explained before eliciting WTP. The membership of the scheme was emphasised as voluntary. The benefit package, management of the scheme, enrolment and payment for the proposed scheme were also well explained to the interviewees to ensure their understanding before proceeding to elicit their WTP using the DBDC-CV method.

Outcome and independent variables

The outcome variables were WTP premium and WTP amount. The independent variables include socio-demographic characteristics (e.g., age, sex, educational level, income, religion and occupation) and social capital. There is no clear consensus on how social capital should be measured. However, in this study, social capital was measured by using both reciprocity and trust indices to develop a social capital index according to the approach developed by Zhang *et al.*^[30]

Statistical analyses

Data generated were analysed using the International Business Machine (IBM) SPSS version 22 (IBM Cooperation, Armonk, New York, USA). Both descriptive and inferential analysis of the data collected was done. Bivariate analysis using Chi-square was conducted, and statistical significance was set at $P < 0.05$. Logistic regression was also conducted to determine the predictors of WTP amount. To measure the independent effect of different variables on the WTP, variables that were significant at $P < 0.05$ during the bivariate analysis (Chi-square analysis) were selected and entered stepwise into a binary logistic regression model to obtain the adjusted odds ratio (AOR) of each variable on WTP for CBHI at 95% confidence interval.

Measurement of social capital

Social capital was measured with ten 5-point Likert scale questions (5 each for trust index and reciprocity index), with responses ranked 1–5 standing for strongly agree to strongly disagree or strongly disagree to strongly agree depending on the question type. The responses were summed and expressed

as trust and reciprocity indices as follows: a high trust index was $\geq 50\%$ of the total obtainable score of 25, which is ≥ 13 points, while a low trust index was $< 50\%$ of the total obtainable score of 25, which is < 13 points. Similarly, high reciprocity is ≥ 13 points while low reciprocity is < 13 points. The combined trust and reciprocity indices were summed up as the social capital index and graded as high social capital, if the total score is $\geq 50\%$ of the total obtainable score of 50, which is ≥ 25 points; or low social capital if the total score is $< 50\%$ of the total obtainable score of 50, which is < 25 points.

RESULTS

Socio-demographic and socioeconomic characteristics of the respondents

The mean age of respondents in this study was 50.42 ± 14.54 years, and over one-quarter (29.1%) of respondents were between 40 and 49 years of age. Females were about half (50.5%) of the respondents, while males were slightly below half (49.5%) of the respondents. The majority of respondents (63.3%) were married, 21.8% were widowed and 10% were divorced. Only 4.9% of respondents were single. A great majority of respondents (90.5%) were Christians, while minority (9.5%) practiced African traditional religion. More than one-quarter (32.0%) of respondents completed senior secondary education, while about one-quarter (25.5) completed primary education. However, about one-fifth (19.9%) of the respondents had no formal education, while less than one-fifth (13.1%) completed tertiary education. The predominant occupation in this study was farming, which accounted for 65.0% of respondents. Petty traders and government workers accounted for 7.3% and 5.6% of respondents, respectively. However, 6.6% of respondents were unemployed, and 15.5% belong to other occupations (such as big business owners and professionals). Most of the respondents (60.9%) had a household size of 6 persons and below, while more than one-third (39.1%) of respondents had a household size of 7 persons and above; and the mean household size was 6 persons. About two-fifths (41.0%) of respondents earn twenty thousand naira and above per month, while about one-third (31.6%) earn less than twenty thousand naira per month. Though more than half (56.3%) of the respondents do not participate in thrift collection, a reasonable proportion of them (43.7%) participate in thrift collection [Table 1].

Level of social capital among respondents

There was a high level of social capital (95.4%) (as measured by combined trust and reciprocity indices) in the study communities. More than three-quarters (75.5%) of respondents had high individual-level social capital (as measured by trust index), while more than four-fifths (89.8%) of the respondents had high community-level social capital (as measured by reciprocity index) [Table 1].

Willingness to pay for community-based health insurance

A good majority (97.1%) of the respondents were willing to pay a premium for CBHI, and they prefer a flat rate

Table 1: Sociodemographic and socioeconomic characteristics of respondents

Variables	Categories	Frequency (%) (<i>n</i> =412)
Age (years)	18–39	96 (23.3)
	40–49	120 (29.1)
	50–59	82 (19.9)
	60 and above	114 (27.7)
	Mean±SD	50.42±14.54
Sex	Female	208 (50.5)
	Male	204 (49.5)
Marital status	Married	261 (63.3)
	Single	20 (4.9)
	Widowed	90 (21.8)
	Divorced	41 (10.0)
Religion	Christianity	373 (90.5)
	African traditional religion	39 (9.5)
Highest completed education	None	82 (19.9)
	Primary	105 (25.5)
	Junior secondary	39 (9.5)
	Senior secondary	132 (32.0)
	Tertiary	54 (13.1)
Occupation	Unemployed	27 (6.6)
	Petty trading	30 (7.3)
	Farmer	268 (65.0)
	Govt worker	23 (5.6)
	*Others	64 (15.5)
	Mean household size±SD	6±3 persons
Household size (number of persons)	6 and below	251 (60.9)
	7 and above	161 (39.1)
	Mean household size±SD	6±3 persons
Household reported income per month in Naira **(US Dollar)	<20,000.0 (\$43.42)	243 (59.0)
	20,000 and above (\$43.42)	169 (41.0)
	Mean±SD	22,287.29±16,865.77 (\$48.39±36.62)
Participation in thrift collection	Yes	180 (43.7)
	No	232 (56.3)
Level of social capital among respondents		
	Individual-level social capital (trust index)	
	High	311 (75.5)
	Low	101 (24.5)
Community level social capital (reciprocity index)	High	370 (89.8)
	Low	42 (10.2)
Social capital (combined trust and reciprocity indices)	High	393 (95.4)
	Low	19 (4.6)

*Others (include big business owners, professionals etc.), **1 US Dollar = ₦460.6. SD: Standard deviation

monthly (92.2%) premium as the most acceptable method of paying the premium. However, more than four-fifths (85.4%) of respondents were not willing to pay a six-hundred-naira monthly premium for other household members. Less than one-fifth (14.6%) of respondents were willing to pay six-hundred-naira monthly premium for other household members [Table 2]. The main reasons given by respondents for not willing to pay were doubts in the management of the fund (58.3%) and lack of money (41.7%) in decreasing order [Table 2].

The mean individual WTP amount per month was 600.75 ± 419.48 Naira (equivalent to 1.30 ± 0.91 US Dollar based on the exchange rate of 460.9 naira to a dollar as at 2017 when the study was conducted); and the median

individual WTP amount was ₦500.00 (US\$1.09). The mean WTP amount per month per household member was ₦460.62 ± 335.65 (US\$1.00 ± 0.73), while the median WTP amount per month per household member was ₦400.00 (US\$0.87). The mean household WTP amount per month was ₦1,748.18 ± N1,842.51 (US\$3.79 ± 4.00), while the median household WTP amount per month was ₦800.00 (\$1.74) [Table 3].

Relationship between social capital and willingness to pay for community-based health insurance

The majority (99.7%) of respondents with high social capital were willing to pay for CBHI, while less than half (42.1%) of respondents with low social capital were willing to pay. The association between social capital ($\chi^2 = 193.043$;

Table 2: Willingness to pay a premium for community-based health Insurance

Variables	Categories	Frequency (<i>n</i> =412), <i>n</i> (%)
Respondents' WTP for self (Individual WTP)	Yes	400 (97.1)
	No	12 (2.9)
WTP ₦600 monthly premium for other household members	Yes	61 (14.8)
	No	351 (85.2)
Preferred method of payment of monthly premium	Flat rate annually	8 (2.0)
	Flat rate monthly	369 (92.2)
	Others*	23 (5.8)

Reasons given by respondents for not willing to pay for CBHI for Self

Reasons for not willing to pay (<i>n</i> =12)	I doubt the management of the fund	7 (58.3)
	Because of lack of money	5 (41.7)

*Others include installment cash payment etc. WTP: Willingness to pay, CBHI: Community-based Health Insurance

Table 3: Willingness to pay amount

Variables	Category	Statistics
Individual WTP amount per month in Naira (US Dollar)* (WTP Amount/month for Self)	Mean±SD	₦600.75±419.48 (\$1.30±0.91)
	Median	500.00 (\$1.09)
	Mode	400.00 (\$0.87)
	Range of values	100.00–3000.00 (\$0.22–6.51)
WTP Amount per month per Household Member in Naira (US Dollar)*	Mean±SD	460.62±335.65 (\$1.0±0.73)
	Median	400 (\$0.87)
	Mode	400 (\$0.87)
	Range of values	50–2000 (\$0.11–4.34)
Household WTP Amount per month in Naira (US Dollar*) (WTP Amount per month per household)	Mean±SD	1748.18±1842.51 (\$3.79±4.00)
	Median	800.00 (\$1.74)
	Mode	400.00 (\$0.87)
	Range of values	100.00–8000.00 (\$0.22–17.37)

*1 US Dollar=₦460.6. WTP: Willingness to pay, SD: Standard deviation

$P < 0.001$) and WTP for CBHI was statistically significant. Both trust index ($\chi^2 = 26.498$; $P < 0.001$) and reciprocity index ($\chi^2 = 80.684$; $P < 0.001$) had a statistically significant association with WTP for CBHI [Table 4].

Predictors of willingness to pay for community-based health insurance

Similarly, the association between sex ($\chi^2 = 10.168$; $df = 1$; $P = 0.001$), education ($\chi^2 = 14.06$; $df = 1$; $P < 0.001$), religion ($\chi^2 = 40.565$; $df = 1$; $P < 0.001$), household with younger people <18 years ($\chi^2 = 14.361$; $df = 1$; $P < 0.001$) and WTP were statistically significant [Table 4]. However, on binary logistic regression, only social capital (trust and reciprocity indices) and education were found to be significant predictors of WTP. The trust index had 13-fold increased odds (AOR = 12.775; 95% confidence interval [CI]: [1.308–124.73]) of WTP, while the reciprocity index had 167-fold increased odds (AOR = 167.201; 95% CI: 11.709–2387.65)

of WTP for CBHI. Conversely, not having a formal education reduced the odds of WTP by 95.7% (AOR = 0.043; 95% CI: 0.004–0.433) [Table 5].

DISCUSSION

The mean age of respondents in this study was approximately 50.4 ± 14.5 years, and it is comparable to previous studies conducted in South-south and South-east Nigeria, which reported that the majority of respondents were in their forties and fifties.^[27,29] This observation is also in keeping with the mean ages of 49.26 ± 14.9 years, 46.2 ± 13.0 years and 47.0 ± 10.2 years reported from previous studies conducted in Nepal, India and Osun State, Nigeria, respectively.^[22,31,32] This finding is indicative of a young and productive population in the study area. Similarly, the mean household size of six persons observed in this study is in consonance with previous studies conducted in South-east Nigeria, Ethiopia and India.^[28,29,32,33] It is suggestive of a large household size, which is in keeping with rural farming communities. The observation of a slightly higher male population and more than half of the respondents being married contrasts with a similar study conducted in north-central Nigeria, which reported a slightly higher female population and less than half of the respondents being married.^[1] This observed difference might be due to differences in geographical location and socio-economic status. However, the observation of more than half of the respondents being married is in agreement with previous studies conducted in Nigeria and in East and West Africa, which revealed that more than half of the respondents were married or living with a partner.^[31,34]

The majority of study participants were farmers, and this observation is in keeping with findings from previous studies conducted in Ethiopia, Burkina Faso and Tanzania.^[28,35,36] The observation that about a quarter of respondents completed only primary education and about one-fifth had no formal education is contrary to a previous study in Nigeria, which reported that more than half of the respondents had primary education and below.^[31] The discrepancies observed in educational status between this study and the previous study might be due to differences in geographical location and cultural factors. The observation that more than two-fifths of respondents participate in thrift collection is suggestive of the fact that the concept of risk sharing and resource pooling is not entirely strange to the community members. It may also be indicative of some level of social solidarity and mutual support in the study communities.

This study observed a high level of social capital, as shown by a great majority of respondents having high trust and reciprocity indices. The existence of a significant level of individual and community-level social capital in this study was further corroborated by the fact that a good proportion of households participated in thrift collection, which could also imply the existence of a good stock of social capital in the study area. The implication of this finding is that there is a good measure of trust and reciprocity in the rural communities, which is necessary for the uptake and sustainability of CBHI.

Table 4: Factors associated with willingness to pay for community-based health insurance

Variables	Categories	WTP		Bivariate analysis, χ^2 (P)
		No (n=12; 2.9%), n (%)	Yes (n=400; 97.1%), n (%)	
Trust index (Individual level SC)*	High trust	1 (0.3)	310 (99.7)	26.498 (<0.001)
	Low trust	11 (10.9)	90 (89.1)	
Reciprocity index (Community level SC)*	High reciprocity	1 (0.3)	369 (99.7)	80.684 (<0.001)
	Low reciprocity	11 (26.2)	31 (73.8)	
SC (Trust and reciprocity index)*	High SC	1 (0.3)	392 (99.7)	193.043 (<0.001)
	Low SC	11 (57.9)	8 (42.1)	
Age (years)	18–49	4 (1.9)	212 (98.1)	1.104 (0.293)
	50 and above	8 (4.1)	188 (95.9)	
Sex*	Female	12 (5.8)	196 (94.2)	10.168 (0.001)
	Male	0	204 (100.0)	
Education*	No formal	8 (0.8)	74 (90.2)	14.06 (<0.001)
	Formal	4 (1.2)	326 (98.8)	
Marital status	Married	5 (1.9)	256 (98.1)	1.633 (0.201)
	*Others	7 (4.6)	144 (95.4)	
Religion*	Christianity	4 (1.1)	369 (98.9)	40.565 (<0.001)
	ATR	8 (20.5)	31 (79.5)	
Household with younger people <18 years*	No	8 (9.9)	73 (90.1)	14.361 (<0.001)
	Yes	4 (1.2)	327 (98.8)	
Occupation	Farmer	8 (3.0)	260 (97.0)	0.000 (1.00)
	Others [†]	4 (2.8)	140 (97.2)	
Household monthly income	≥N20,000	4 (2.4)	165 (97.6)	0.000 (0.987)
	<N20,000	4 (3.1)	126 (96.9)	

*Significant at $P<0.05$, *Others include single, widowed and divorced, [†]Others include traders, government workers, business etc. ATR: African traditional religion, WTP: Willingness to pay, SC: Social capital

Table 5: Binary logistic regression showing the predictors of willingness to pay for community-based health insurance

Variables	Categories	Binary logistic analysis		
		AOR	95% CI	
			Lower limit	Upper limit
Trust index (individual level SC)*	High trust	12.775	1.308	124.73
	Low trust	1		
Reciprocity index (community level SC)*	High reciprocity	167.201	11.709	2387.65
	Low reciprocity	1		
Education*	No formal	0.043	0.004	0.433
	Formal	1		

*Significant at $P<0.05$. CI: Confidence interval, AOR: adjusted odds ratio, SC: Social capital

This finding agrees with a similar study in rural China, which reported that both reciprocity index (community level social capital) and trust index (individual level social capital) had a significant positive association with willingness to join a government subsidised community-based insurance.^[30]

This study revealed that a great majority of respondents were willing to pay a premium for CBHI, and this observation is comparable to previous studies in Nigeria, The Gambia, Kenya, Tanzania and Uganda where the majority of respondents were willing to pay health insurance premium.^[1,34,37-39] Despite the high individual WTP expressed in this study, less than one-fifth (14.6%) of respondents were willing to pay a 600-naira monthly premium for other household members. This finding is contrary to a previous study done in seven communities in

four African countries, where a little above half (54.7%) of the respondents were willing to pay for all household members.^[28] This is probably due to differences in socioeconomic status and geographical location. The observation that less than one-fifth of respondents were willing to pay 600-naira monthly premium for other household members could be due to inadequate funds to cover other household members. This is corroborated by the fact that the main reasons given by respondents for not willing to pay for CBHI were lack of trust in the management of the fund and lack of money. It could also be due to a feeling that household members/dependents should not have a separate payment but should rather benefit from their own enrolment.

Most respondents (92.2%) indicated flat rate monthly premium as the most preferred method of paying their premium, while

flat rate annual premium (2.0%) was the least preferred method of payment for premium in this study. This observation indicates that a flat rate monthly payment should be considered as the most acceptable method of paying for premiums in the design of CBHI in the rural communities. The study participants probably consider this method of payment more economically convenient and less cumbersome than flat rate annual payment and other payment methods (e.g., installment payment), respectively. However, a flexible cash payment arrangement might be the most appropriate method of payment for the premium to accommodate those who cannot afford a one-time monthly or annual cash payment.

The mean WTP amount per person per month observed in this study was 600.75 ± 419.48 naira (US\$1.30 $\pm$ 0.91); which translates to 7,209 naira per person per annum. This is comparable with the amount reported from a previous survey conducted in Delta State by NHIS, where the mean WTP amount per person per month was reported to be 682.30 ± 281 naira.^[40] However, it is higher than the fixed premium of 7000 naira per year for the informal health plan of DSCHS.^[24] It is equally higher than the mean amounts reported from previous studies conducted in Anambra and Enugu States, South-East Nigeria, where the WTP amount per person per month ranges from 250 Naira (US\$1.7) in rural communities to 343 Naira (US\$2.9) in urban communities.^[5] Similarly, the mean WTP amount recorded in this study is equally higher than what was reported in previous studies conducted in Osun state, South-West Nigeria and in Ilorin South Local Government Area of Kwara State, North-central Nigeria.^[31,41] The study in Osun state reported a WTP amount of ₦1798.90k per year in urban households and ₦721.70k per year in rural households.^[31] The differences observed in this study and the previous studies are probably due to the fluctuations in both the exchange rate and inflation rate in Nigeria, which have been characterised by galloping inflation and progressively decreasing value of the Naira. Nevertheless, the median individual WTP amount of ₦500.00 (US\$1.09) per month observed in this study is lower than \$2 per person per month reported in various communities in Africa as the median amount willing to pay for health insurance.^[34] This is probably due to differences in the prevailing exchange rate in the study areas.

Furthermore, the mean WTP amount per household member observed in this study was 460.62 ± 335.65 Naira (US\$1.00 $\pm$ 0.73) per month per household member. In a study in Kwara state, a WTP amount of 522.0 ± 266.3 Naira (3.26 $\pm$ 1.66 US Dollars) per annum per household member was reported.^[41] The WTP amount per household member observed in this study is clearly higher than what was reported in the previous studies.^[5,41] The inflation rate at the time of this study can also account for the higher WTP amount expressed in this study. Other possible reasons for the difference in average WTP amount observed in this study, when compared to the other studies, include differences in geographical location, time of study, socioeconomic status

of the respondents and the contingent valuation methods used in the respective studies. This study also revealed that the WTP amount per household member was lower than the individual WTP amount for the household head. This may be due to household heads assigning differential weight to other household members in their WTP estimation.

This study further revealed that the mean WTP amount per household per month was 1748.18 ± 1842.51 naira (\$3.79 $\pm$ 4.00). This implies that the mean household WTP amount observed in this study is less than the individual WTP amount multiplied by the mean household size. This finding is corroborated by a study in Burkina Faso, where household WTP amount was less than the individual WTP amount multiplied by the household size.^[42] The implication of this finding is that household WTP should be given due consideration over individual WTP when setting a premium for household enrolment. This is because the premium for a household estimated by individual WTP would be much higher than that estimated by household WTP if the enrolment unit was the household.

It was observed that a great majority of respondents with high social capital were willing to pay for CBHI, and the association between social capital and WTP was statistically significant. Thus, this study has revealed that social capital is significantly associated with WTP for CBHI. Both individual-level social capital (measured by trust index) and community-level social capital (measured by reciprocity index) had a statistically significant association with WTP. This finding is in agreement with previous studies conducted in Nepal and rural Tanzania, where social capital was found to have a significant positive relationship with WTP for CBHI.^[22,36] It also corroborated a previous study done in Ghana where social capital was found to have a positive influence on enrolment in the health insurance scheme.^[23] Other significant factors associated with WTP were sex, education, religion and household with younger people <18 years.

However, on binary logistic regression, only social capital (trust and reciprocity indices) and education were found to be a significant predictor of WTP. The trust index had 57-fold increased odds (AOR = 56.9; 95% CI: 2.4–1367) of WTP, while the reciprocity index had 387-fold increased odds (AOR = 387.4; 95% CI: 23.3–6450.1) of WTP for CBHI. This study has corroborated the findings of Zhang *et al.* in rural communities of China that social capital measured by trust and reciprocity had a positive and significant effect on the demand for CBHI.^[24] It has also corroborated the findings in rural Cameroon that social capital has a positive impact on WTP.^[21] This finding also agrees with previous studies, which revealed that social capital has a direct positive association with WTP.^[22,23,36] It implies that people with higher social capital (trust and reciprocity) are more willing to pay for CBHI. This stands to reason, in the sense that when people have trust and confidence in the CBHI scheme and the operators of the scheme, they will be more willing to contribute towards the scheme. This study has further corroborated the fact

that trust is very essential to the uptake, success and sustainability of CBHI.^[13,21,30,36] It underscores the importance of building social capital as a prerequisite for a successful CBHI in rural communities of Delta State. The affordability of premiums may not be enough to ensure optimal uptake and sustainability of informal sector health insurance in the study community. Thus, social capital in the form of trust and reciprocity is equally an important factor (if not more important) for the success of any CBHI scheme. Education was also found to be a predictor of WTP for CBHI in this study. It was found that not having a formal education significantly reduced the odds of WTP for CBHI. It implies that those without formal education are less likely to pay for CBHI. This observation is corroborated by previous studies that have reported the level of education to be significantly associated with WTP for health insurance.^[34,38] This finding is, nonetheless, expected because those without formal education are more likely to be ignorant of the benefits of health insurance schemes. Thus, they may be unwilling to pay for such schemes.

These findings should, however, be interpreted with caution since the study employed a hypothetical CBHI scenario, hence, does not reflect actual enrolment and WTP in practice. Thus, a follow-up study following the introduction of the scheme in the study area will provide very useful information about actual enrolments and contributions.

CONCLUSION

A vast majority of heads of households were willing to pay a premium for CBHI, and they prefer a flat rate monthly premium as the most acceptable method of payment. The amount of premium they were willing to pay ranges from 500 to 600 naira (\$1.09–1.30) per month per person or 800–1750 naira (\$1.74–3.8) per month per household. Both individual-level social capital (measured by trust index) and community-level social capital (measured by reciprocity index) were very high in the study area and were found to have a statistically significant association with WTP for CBHI. Although social capital, sex, education, religion and household with younger people less than 18 years were found to have a statistically significant association with WTP, only social capital was a significant predictor of WTP for CBHI.

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Conflicts of interest

There are no conflicts of interest.

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